



Division of Agricultural Resources

The Idaho

Chemigator

## Idaho's List of Approved Chemigation Equipment

Revised November 2015

Idaho's Chemigation Program started with the passage of the Chemigation Law in 1989. The Chemigation Program is authorized by the Idaho Pesticides and Chemigation Law (Chapter 34, Title 22, *Idaho Code*) and the Idaho Rules Governing Pesticide and Chemigation Use and Application, IDAPA 02.03.03.

**Chemigation** is the injection of chemicals (fertilizers or pesticides) into an irrigation system. The chemigation program is designed to license, educate and regulate the injection of pesticides and fertilizers into agricultural, domestic or municipal irrigation systems. The Chemigation Program ensures that proper equipment is installed in irrigation systems to prevent the backflow of chemicals into the water source. Backflow may occur due to either "backsiphonage" or "backpressure".

**Licensing:** A private or professional applicator may obtain the chemigation category on their license by passing the chemigation exam. The Chemigation Study Manual, used to study for the exam, is available for purchase from the ISDA office in Boise.

**Equipment:** Agricultural irrigation systems require an approved chemigation valve consisting of an irrigation line check valve, vacuum relief valve, inspection port, low pressure drain and twenty foot hose. An injection line check

valve and interlock (electrical, mechanical or human supervision) are also required.

On surface water systems only, a gooseneck, over-a-hill or downhill system can be used in place of the chemigation valve. These systems require a two-foot difference between the bottom side of the pipe at the loop apex and the highest sprinkler head on the highest part of the field. An injection line check valve and interlock are also needed.

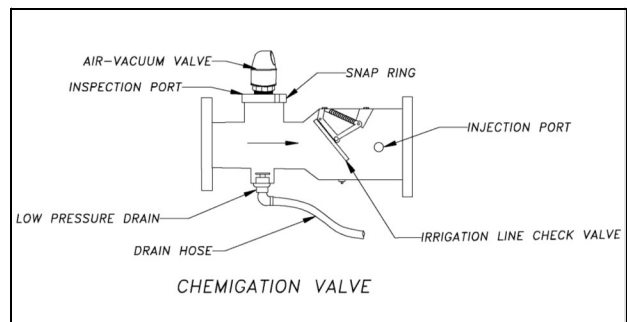
Chemigating with anhydrous ammonia and drip tanks in an open ditch requires a chemigation license. The injection must be done below a break in the water, such as a weir.

Irrigation systems, such as those used in greenhouses, supplied by domestic or municipal water require either an Air Gap (AG) or a Reduced Pressure Backflow Assembly (RP). An interlock is also required. The equipment list can be found in the brochure entitled: Chemigation Approved Backflow Prevention Assemblies for Domestic and Municipal Water Supplies.

**Note:** When using a pesticide product, read and follow the label instructions on injecting the product into an irrigation system. ISDA does not install, sell, or endorse any equipment listed in this brochure.

### Chemigation Valve

An Irrigation Line Check Valve (flapper), Vacuum Relief Valve, Inspection Port, Low Pressure Drain with Drain Hose and an Injection Line Check Valve are the required parts of the chemigation backflow prevention equipment.

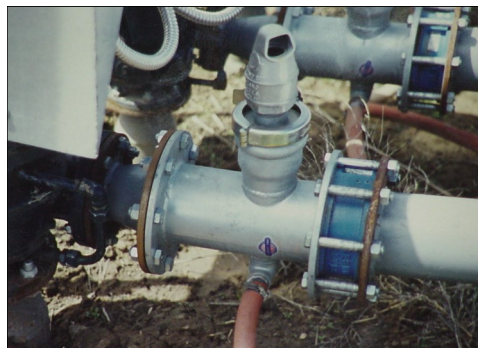


Irrigation Line Check Valve (Chemigation Valve)	
Manufacturer	Model (nominal size in inches)
Clemons Sales Corp.	CCV (4, 6, 8, 10, 12)
Lake Company	(4, 6, 8, 10)
Midwest Irrigation Co.	CVP (6, 8, 10, 12)
Morrill Industries	I533 (4, 6, 8, 10)
Pierce Corporation	1775-60 (3), 1775-61 (4), 1778-61 (6), 1778-62 (8) 1778-63 (10), 1778-64 (12)
Reinke Manufacturing Co., Inc.	CV8-RL (Blu Rivr) (8 -no longer made since 1995)
T-L Irrigation Co.	IV6109 (6), IV110 (8), IV6111 (10)
Water Specialties Corporation	ML-CV-S (6, 8, 10, 12)
Waterman Industries, Inc.	CPC-30B (4, 6, 8, 10, 12)
API International/Enbee	CMV-FL (4, 6, 8, 10, 12)
Kroy-Midwest	CVMW (6, 8, 10)
Gheen Irrigation Works, Inc.	CMV-FL (3) (4) (6) (8) (10) (12)

The Irrigation Line Check Valve (flapper) prevents the chemical/water mixture from returning back to the water source.

An Inspection Port is required to allow inspection of the Irrigation Line Check Valve to see that it is functioning correctly and for any possible wear. It also allows inspection of the Low Pressure Drain for possible clogging and to make sure that it is functioning correctly.

A Chemigation Valve can be installed as a unit, found on the front page of this brochure and at left. Or an approved Wafer Check Valve, as seen in the photographs below, can be installed with a spool containing a Vacuum Relief Valve, Inspection Port, Low Pressure Drain and Hose (below center).



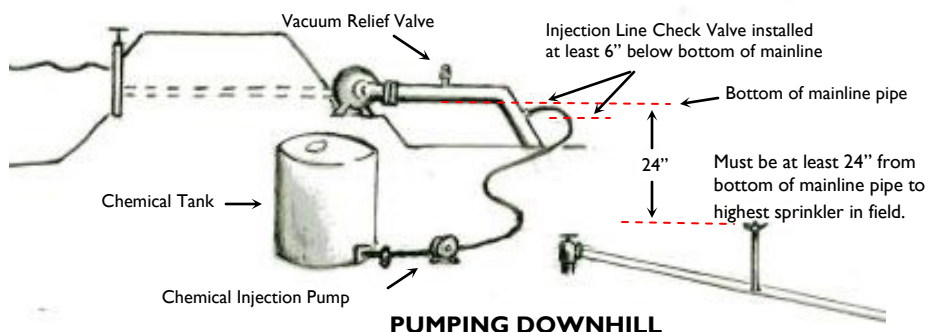
Chemigation Valves with Vacuum Relief Valves, Low Pressure Drains and Hoses installed.

\* 10" & 12" Matco-Norca removed from list on 11/9/05. Valves installed prior to 11/9/05 may be used if leakage is not detected.

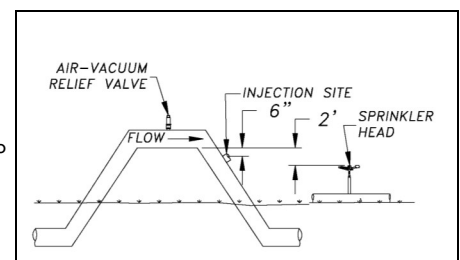
Irrigation Line Check Valve – Split Disk Wafer Check Valve	
Manufacturer	Model (nominal size in inches)
Fresno Valves & Casting Inc.	CVW 150 (4, 5, 6, 8, 10, 12)
Netafim USA	65ARIN4, 65ARIN6 (4, 6)
Matco-Norca	CVC (4, 6, 8) *
Universal Irrigation Sales Co.	CV (4, 6, 8, 10, 12)

## Gooseneck, Pumping Downhill or Over A Hill

A Gooseneck, Pumping Downhill, or Over A Hill configuration may be used in place of a chemigation valve for surface water only. The bottom side of the pipe, at the loop apex or bottom side of the pump discharge, must be at least 24" above the highest sprinkler in the field. A Vacuum Relief Valve must be located at the top of the pipe loop. An injection line check valve must be installed at least 6" below the bottom of the pipe at its apex and a system interlock is required.



Gooseneck Pipe Loop



## Vacuum Relief Valve

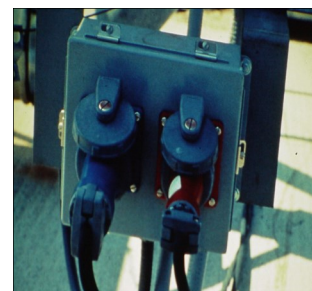
The Vacuum Relief Valve allows air to enter into the system to help prevent the pipe from collapsing when the system shuts down. Combination air/vacuum relief valves allow air to escape when the system is turned on.

Manufacturer	Model (nominal size in inches)
Bermad	4415 (2), 4420 (2)
Fresno Valves & Casting Inc.	200 (2), 300 (3), 400 (4), Series 3000 (marked F030-2014)
Global Irrigation, Inc.	150 AV (1.5), 200 AV (2), 300 AV (3), 400 AV (4)
IPACO	2AV (1.23), 2AVE (1.96), 3AV (3.14)
Midwest Irrigation Co.	1.5, 2
Rainbird	RB-2AV (2)
Travis Pattern & Foundry Inc.	AV-150 (1.5), AV-200 (2), AV-300 (3)
Waterman Industries, Inc.	AV-150 (1.5, 2, 3, 4), AVP-1 (1, 2, 3), CRP-8 (1, 2, 3), CR-100 (2, 3, 4)
Clemons Sales	AR200C (2"), AR300C (3")
Valplastic USA, LLC	1 1/2", 2", 3", 4" NPT Female inlet, AVR-1, AVR-1C, AVR-2, AVR-2C
XCAD Valve and Irrigation	2AV Aluminum Air Vent
Netafim USA	Guardian 65ARIA (3/4", 1", 2", 3"), Combination 65ARIB2 (2"), Combination ARIB2-B (2"), Combination 65ARIB2-PP (2"), Combination ARIB2-BPP (2")
Gheen Irrigation Works, Inc.	VRV2 2"



## Interlock - Electrical, Mechanical and Human

When chemigating, an Electrical Interlock, Mechanical Interlock or Human Supervision is required to shutdown the chemical injection pump if an irrigation system failure occurs. Human Supervision can only be used for applications of one (1) hour or less. Installation of a chemigation valve or gooseneck, and an injection line check valve is still required.



## Injection Line Check Valve

The **Injection Line Check Valve** is constructed of plastic or metal, must be placed into the injection site and have a cracking pressure of at least 10 psi. This prevents the backflow of water into the chemical tank, causing a possible overflow mixture of water and chemical onto the ground and into the water source. The Injection Line Check Valve will also help prevent the full pressure of the irrigation system from blowing the chemical injection hose. The valve must be located downstream of the irrigation line check valve. The Injection Line Check Valve may also help mix chemical with the water in the pipeline.

Manufacturer	Model
Inject-O-Meter Mfg. Co., Inc.	3/4", 1/2," Max-94, 3/4" (flat on 4 sides for wrench)
Raguse & Co., Inc.	Shur-Mix II
Agri-Inject, Inc.	Mister Mist'r, Mister Mist'r Ultra, Mister Mist'r CVPC, Mini Mist'r, Mister Mist'r Stainless Steel
Jaeco Fluid Systems, Inc.	316 Stainless Ball Check 10 PSI (1/4", 3/8", 1/2", 3/4", 1") 316 Stainless 10 PSI O-Ring (1/4", 3/8", 1/2", 3/4", 1")
Neptune Chemical Pump Co., Inc.	PPQ50, SSQ75, SSQ100
Ozawa R & D, Inc.	PN 2349, 2351, 2352
Grundfos Pumps Corp.	1/2", 3/4" Series IV-200, IV300
CDS-John Blue Co.	115026-HS, CV-1310





## Low Pressure Drain and Hose



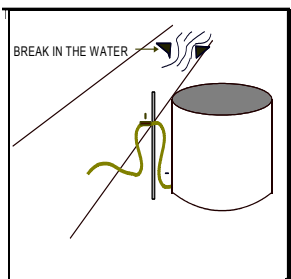
The Low Pressure Drain opens when the system shuts down and allows the water from the area between the flapper and irrigation pump to drain away from the pipe and water source. The drain hose must be long enough to discharge the water at least 20' away from the water source.

Manufacturer
Pierce Corporation
T-L Irrigation Co. (COBCO)
Waterman Industries, Inc.

## Drip Tank and Anhydrous

When dripping fertilizer from tanks or anhydrous ammonia located along farm ditches, the injection must be placed below (after) a break in the water (weir).

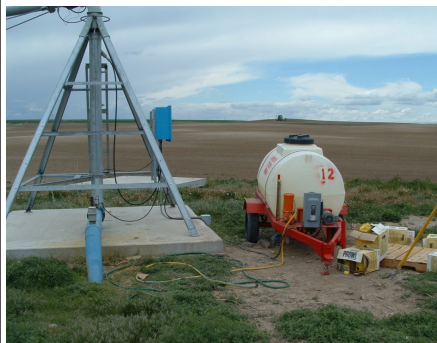
A chemigation license is also required when using this method of chemigation.



## Chemical Injection Devices

**Metering Pumps, Venturi Systems, etc.**

The chemical injection device draws chemical from the chemical tank and pumps it into the irrigation system. ISDA Chemigation Rules only require the injection device be resistant to the chemical you use, therefore ISDA does not provide a list of approved injection devices. Below are examples of some types of injection devices commonly used for chemical injection.







Chemigation Valves



Wafer Check with Spool



Injection Line Check Valve



Injection Line Check Valve



Electrical Interlock



Injection Pump



## Idaho State Department of Agriculture

### Idaho's Chemigation Program

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ADDRESS CORRECTION REQUESTED

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#### Idaho's Chemigation Web Site:

<http://www.agri.idaho.gov/Categories/Pesticides/chemigation/indexChemigationmain.php>

#### Idaho State Department of Agriculture Web Site:

<http://www.agri.idaho.gov/>

Even though a specific model has met required specifications during initial product review, each valve must meet the specifications when inspected on site. If an individual valve does not meet the specifications when inspected, it must be repaired or replaced prior to chemigation.

The listed chemigation equipment has met the test criteria as specified in the Pesticides and Chemigation Law, Section 22-3407B, Idaho Code and the Rules Governing Pesticide and Chemigation Use and Application, IDAPA 02.03.03.966 and is ap-

Costs associated with this publication are from Idaho State Department of Agriculture in accordance with Section 60-202, Idaho Code. 1/03/32302